

Thirteenth Note on the Number of Faint Stars with Large Proper Motions. Zones +26° and +27°. By F. A. Bellamy, M.A.

This note clears off all the plates that have been measured and that are suitable for comparison for proper motions. Reference to the former notes are given in the Twelfth Note, *Monthly Notices*, 78, 471.

As shown in Table I., two of the five plates now included have intervals between the two pairs of less than ten years. They are interesting regions. The other three pairs have twenty-three years' interval. The region about +26° 4^h 24^m is the barest region in the whole of the Oxford seven zones.

TABLE I.

Stars with Probable Large Proper Motions.

Zone. R.A. Plate Centre.	h m	Total Stars Compared.	Interval in Years.	Total P.Ms.	Centennial P.Ms.	
					Above 15".	Below 15".
+26° 2	56	199	23·15	11	3	8
+26 4	16	116	23·15	3	0	3
+27 4	20	28	8·08	0	0	0
+26 7	4	243	22·98	5	2	3
+27 11	48	84	9·22	1	1	0
5 plates		670	...	20	6	14

From the comparison of these 670 stars, only 20 stars with proper motions above 6".5 in a century have been found; of these, 8 are stars in the Cambridge *A.G.C.*, but none visible to the unaided eye, and all are under half a second of arc in a year. The results are disappointing, though useful.

The same methods and limits in former notes in this series have been followed. One plate, +27° 11^h 48^m, was very accurately measured at H.H. the Nizam's Observatory at Hyderabad by D. R. Sripathi Rao in 1915.

In the comparison of plates 255 (1892·947) and 2932 (1916·101) the star in Oxford +26° 7246 was not found on the later and slightly better plate in point of number measured. In the examination of the plate 255 a stellar object is certainly still there—the plate was measured twenty-one years ago—but the separation between the two images in y is slightly less than it should be. May it be a planet?

Cambridge *A.G.C.* 3745 and 3746 (Oxford +26°, 20264, 20265). In our ledgers for Oxford–Cambridge, and in the *Oxford Astrographic Catalogue*, viii. pt. 1, p. 31, these two stars gave unusually large residuals in x , $-0.37 + 0.001$ and $-0.22 + 0.003$. The comparison of the two plates 300 (1893·121) and 2936 (1916·101) shows that the large residuals in x must be due to the Cambridge observations, since the Oxford Δx and Δy are

in twenty-three years, for 3745 $- \cdot 002 + \cdot 001$, and for 3746 $+ \cdot 001 + \cdot 002$ (unit = $0^{\prime\prime} \cdot 3$).

In $+ 26^{\circ} 7^h 4^m$, Oxford 20286 should be omitted; it is the same as 20285.

TABLE II.

List of P.Ms.

Plate Centre.		Oxford.		A.G.C.	$\Delta x.$	$\Delta y.$	Cent.	Interval
		No.	ϕ Mag.	No.	($\cdot 001 = 0^{\prime\prime} \cdot 3$)		P.M. in Arc.	in Years.
$+ 26^{\circ}$	$7\ 4$	20123*	8.9	3831	$- \cdot 032$	$- \cdot 004$	42.0	22.98
$+ 26$	$2\ 56$	7181	10.8	...	$+ \cdot 017$	$- \cdot 017$	31.1	23.15
$+ 27$	$11\ 48$	28359	11.7	...	$+ \cdot 008$	$\cdot 000$	26.1	9.22
$+ 26$	$2\ 56$	7233*	7.6	1553	$+ \cdot 017$	$- \cdot 010$	25.6	23.15
$+ 26$	$2\ 56$	7247*	9.2	1530	$- \cdot 001$	$+ \cdot 014$	18.2	23.15
$+ 26$	$7\ 4$	20192*	7.5	3774	$- \cdot 007$	$- \cdot 013$	14.8	22.98
$+ 26$	$2\ 56$	7201	11.7	...	$- \cdot 003$	$- \cdot 007$	9.9	23.15
$+ 26$	$7\ 4$	20176*	9.4	3814	$- \cdot 005$	$- \cdot 005$	9.2	22.98
$+ 26$	$2\ 56$	7179	10.1	...	$- \cdot 007$	$- \cdot 001$	9.2	23.15
$+ 26$	$2\ 56$	7172	12.1	...	$+ \cdot 005$	$- \cdot 004$	8.3	23.15
$+ 26$	$4\ 16$	10336	11.2	...	$+ \cdot 003$	$- \cdot 005$	7.6	23.15
$+ 26$	$2\ 56$	7116	10.3	...	$- \cdot 002$	$- \cdot 005$	7.0	23.15
$+ 26$	$2\ 56$	7318*	9.3	1534	$- \cdot 005$	$+ \cdot 002$	7.0	23.15
$+ 26$	$7\ 4$	20172	11.5	...	$+ \cdot 005$	$+ \cdot 001$	6.7	22.98
$+ 26$	$7\ 4$	20162*	10.9	3768	$- \cdot 003$	$- \cdot 004$	6.5	22.98
$+ 26$	$2\ 56$	7167	11.9	...	$+ \cdot 003$	$- \cdot 004$	6.5	23.15
$+ 26$	$2\ 56$	7175	11.7	...	$+ \cdot 005$	$\cdot 000$	6.5	23.15
$+ 26$	$2\ 56$	7218*	8.8	1522	$+ \cdot 004$	$+ \cdot 003$	6.5	23.15
$+ 26$	$4\ 16$	10380	11.3	...	$+ \cdot 003$	$- \cdot 004$	6.5	23.15
$+ 26$	$4\ 16$	10413	10.9	...	$+ \cdot 004$	$- \cdot 003$	6.5	23.15

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On the Measurement of Time to the Thousandth of a Second.

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All time errors are relative quantities, for they arise from the comparison of two standards, whether these are merely two clocks, or a clock and a stellar transit, or otherwise. Hence when an irregularity appears the question arises which is technically known as “bringing home the guilt.” When the matter is looked into more closely the problem becomes more intricate, because in the